

Atty. Docket No. CH919990004US1  
(590.016)

### REMARKS

Applicants and the undersigned are most grateful for the time and effort accorded the instant application by the Examiner. The Office is respectfully requested to reconsider the rejections presented in the outstanding Office Action in light of the following remarks. Applicant intends no change in scope of the claims by the changes made by this amendment and has introduced no new matter to the specification.

Claims 8 - 18 were pending in the instant application at the time of the outstanding Office Action. Of these claims, Claims 8 and 15 are independent claims; the remaining claims are dependent claims.

#### The Claimed Invention

The claimed invention provides and improved Alq3 derivatives for use in organic light emitting devices (OLEDs). The claimed compositions provide improved intrinsic luminescent yield by providing "using an electron-donor group ( $R^{P^*}$ ) in the 3- or 4-position and, at the same time, an electron-acceptor or p-delocalizing group ( $R^{ph}$ ) in the 5-position." Specification, page 7, lines 9-11. Moreover, the claimed Alq3 derivatives have "a larger intrinsic luminescence yield with a calculated enhancement factor up to four [to yield a] device [with] a larger quantum efficiency than any other device made by unsubstituted and undoped Alq3. Specification, page 8, lines 13-15. As more clearly defined by the amended claims, the compositions yield a device with improved properties over prior art devices. These improved properties are not suggested by the art of record.

Atty. Docket No. CH919990004US1  
(590.016)

**The 35 USC § 112 Rejections**

Rejections are made under both the first and second paragraphs of 35 U.S.C. § 112. Claims 8-18 stand rejected under 35 U.S.C. § 112, first paragraph, as allegedly failing to comply with the written description requirement. Claims 8-14 stand rejected under 35 U.S.C. § 112, second paragraph, as allegedly being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Claims 8 and 15 have been rewritten to in a manner in which obviates these rejections, as the application as filed recites "using an electron-donor group (R<sup>Py</sup>) in the 3- or 4-position and, at the same time, an electron-acceptor or p-delocalizing group (R<sup>Ph</sup>) in the 5-position." Specification, page 7, lines 9-11.

**The 35 USC § 103(a) Rejections**

Claims 8-14 stand rejected under 35 U.S.C. 103(a) in view of Tang in view of Moore et al. (hereafter "Moore"). Claims 15-18 also stand rejected under 35 U.S.C. 103(a) in view of Tang and Moore as applied to Claims 8-14 and further in view of the statement in the written description (Page 8, lines 4-10) that the organic EL device could have two or three layers in addition to the electrodes. Reconsideration and withdrawal of the present rejections are hereby respectfully requested.

Tang discloses electroluminescent devices and generally describes the components of such devices. The Examiner again acknowledges that "Tang does not disclose that Alq3 is substituted in 3- or 4- position with electron-donor group and in 5-

Atty. Docket No. CH919990004US1  
(590.016)

positions simultaneously with an electron-acceptor or p-delocalizing group." (Office Action dated 8/26/03, page 4, lines 13-15).

Moore discloses mixed ligand aluminum chelates for use in electroluminescent devices. Moore discloses a large variety of substituents each of which can be placed at one or more of 6 positions and each of which may or may not be electron-donating or electron-accepting and any of which can be used in an electroluminescent device. Moore thus does not provide a teaching or suggestion of the instantly claimed composition. Combination of Moore and Tang fails to teach or suggest the instantly claimed invention.

As noted in the previous response by Applicant, and as more clearly defined by the claims, the instantly claimed invention requires specific substitutions of a very specific nature; substitutions at 3 or 4 and 5 and only electron-donating substituents at either position 3 or 4 and only electron-accepting substituents at position 5. These specific restrictions are not provided by Moore. In addition, the Moore compositions are physically different from those of the claimed invention. For instance, column 3, lines 56-60 read:

The advantage of employing an aluminum chelate with one or two substituted 8-quinolinolato ligand(s) and one or two ligand(s) which are not substituted 8 quinolinolato ligands is that all of the potential physical properties of tris(8-quinolinolato)aluminum(III) chelates are attained. (emphasis added).

Atty. Docket No. CH919990004US1  
(590.016)

Clearly, a mixture of substituted ligands and unsubstituted ligands is not the same as the instantly claimed compounds and could not be expected to provide the same material properties of the claimed invention.

Moreover, the product produced by the Moore patent would not result in the instantly claimed invention. This is acknowledged by the Examiner in the statement that Moore 'teaches' "substitutes may be made in all six positions including 3-, 4- and 5-positions of the quinoline ring." Office Action page 4, lines 17-18. The instantly claimed invention does not allow for substituents at all positions and only allows for and requires specific substituents at specific positions. Moore does not teach or disclose these limitations. In discussing placement of substituents, Moore simply states:

Substituents at the 4, 5 and 6 ring positions are not favorably located to hinder sterically or otherwise impair the bonding of three 8-quinolinolato nuclei to a single aluminum atom, while it is contemplated that large substituents at the 3 or 7 ring positions could provide sufficient steric hindrance. On the other hand, the 2 ring position is suited to provide hindrance (e.g., steric hindrance), and even a very small substituent (e.g., a methyl group) in this ring positions can provide an effective blocking substituent. For synthetic convenience it is specifically preferred that steric blocking substituents be located in the 2 ring positions. As employed herein the 'steric blocking' is employed to indicate that the  $(R^S)_m-Q$  ligand will normally not coordinate effectively for inclusion as the third ligand of the aluminum atom. Column 6, lines 45-58.

The Examiner attempts to overcome the deficiencies in the Tang and Moore references by insisting that "[t]he teaching [of Moore] clearly includes the specific substitutions of 3 or 4 and 5-positions as claimed." As shown above, Moore does not

Atty. Docket No. CH919990004US1  
(590.016)

specifically suggest this combination and certainly does not suggest this combination to the exception of all other possible combinations. Claims 8 and 15, as amended, are not suggested by Moore in view of Tang. Likewise, dependent claims 9-14 and 16-18 are not taught or suggested by the cited art.

In response to the Applicant's discussion of the individual references, the Examiner remarks "one cannot show nonobviousness by attacking references individually where the rejections are based on combinations of references." (Office Action at Page 8, lines 3-5) Nearly twenty years ago, the Court of Appeals for the Federal Circuit recognized the importance of the individual references in characterizing the holding of *In re Imperato*, 179 USPQ 730 (C.C.P.A. 1973), as follows:

The lesson of this case appears to be that prior art referenced in combination do not make an invention obvious unless something in the prior art references would suggest the advantage to be derived from combining their teachings.

Again, in *ACS Hospital Systems, Inc. v. Montifore Hospital*, 221 USPQ 929 (Fed. Cir. 1984), the Court stated:

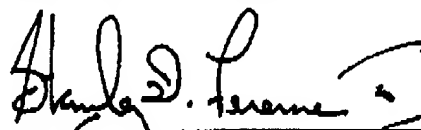
Obviousness cannot be established by combining the teachings of the prior art to produce the claimed invention, absent some teaching or suggestion supporting the combination. Under section 103, teachings of reference can be combined **only** if there is some suggestion or incentive to do so. The prior art of record fails to provide any such suggestion or incentive. Accordingly, we hold the Court below erred as a matter of law in concluding the claimed invention would have been obvious to one of ordinary skill in the art under section 103.

These Federal Circuit teachings are especially cogent here given the combination of Moore and Tang fails to teach or suggest the instantly claimed invention.

Atty. Docket No. CH919990004US1  
(590.016)

In view of the foregoing, it is respectfully submitted that Claims 8 and 15 fully distinguish over the applied art and are thus in condition for allowance. By virtue of dependence from what is believed to be allowable independent Claims 8 and 15, it is respectfully submitted that Claims 9-14 and 16-18 are also presently allowable.

Respectfully submitted,



Stanley D. Ference III  
Registration No. 33,879

FERENCE & ASSOCIATES  
400 Broad Street  
Pittsburgh, Pennsylvania 15143  
(412) 741-8400  
(412) 741-9292 - Facsimile

Attorneys for Applicants